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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,983	11/30/2003	Wayne Theel	13312/115	1885
24325	7590	07/12/2005	EXAMINER	
STEPHEN D. SCANLON JONES DAY 901 LAKESIDE AVENUE CLEVELAND, OH 44114			LUU, PHO M	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,983

Applicant(s)

THEEL, WAYNE

Examiner

Pho M. Luu

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-15 is/are allowed.
- 6) ☒ Claim(s) 1,5-8,10,16 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-4,9,17 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input checked="" type="checkbox"/> Other: <u>Search History</u> . |

DETAILED ACTION

1. This office action acknowledges receipt of the following items from the Applicant:
 - The Specification, the claims, the drawing, an abstract and oath or Declaration filed on 11/30/2004.
 - New Drawing in Figure 7 filed 05/07/2005.

Specification

2. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Naji. (US. 5,946,227).

Regarding independent claims 1 and independent claim 16, Naji in Figures 1-2 discloses a word current source for a magnetoresistive random access memory circuit (10, Fig. 1 and 30, Fig. 2) comprising:

A control circuit (20, Fig. 1) having a control input (inherence, switch control circuit such as the input apply to circuit);

An n-channel transistor (19, Fig. 1) including a gate is connected to the control input (output switch control 20 coupled to input gate 19), a source which is coupled to ground (source of n-transistor 19 coupled to ground 24) and a drain (drain of n-transistor 19 coupled to source n-transistor 18 and the drain of n-transistor 18 coupled to magnetic layer 15) which is the drain coupled to the MRAM circuit; and

A positive supply voltage (inherence, 10, Fig.1 having the supply voltage such as power connected in magnetic circuit) coupled to the MRAM circuit so as to allow current to flow through the MRAM circuit when an activation signal (word line control 23 send a word signal on digit line 13 and word line 17 to turn transistor 18 on and at the same time that switch control 20 turn transistor 19 on) is applied to the gate by the control circuit (see column 3, lines 1-11). More specifically, word line control 23 send signal to digit line 13 and word line 17 to turn on transistor 18 such as the same time the switch control 20 turn on transistor 19 which is the bit line control 22 provided a sense current on bit line 12 which flows through memory cell 11, transistor 18 and 19 and to a ground line 24.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji

(US. 5,946,227) in view of Sin et al. (US. 6,803,615).

With respected to dependent claims 5-6, Naji discloses a word current source for a magnetoresistive random access memory circuit as in claim 1 above, with the exception of a n-channel transistor comprising a complementary metal oxide semiconductor (CMOS) n-channel field effect transistor when CMOS n-channel field effect transistor is turn on and off.

Sin et al in Fig. 2 discloses a n-channel transistor such as CMOS (32) n-channel field effect transistor to turn on and off. (see column 2, line 48-50). (inherence, the CMOS transistors are switching between on and off states circuit).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art using the transistor which is complementary metal oxide semiconductor (CMOS) of Sin et al substituted the transistor of Naji for the purpose of write/read operation such as prevent the write current in the bit line and switched to closed when the read current flow in magetoresistive random access memory circuit (see Sin et al. column 2, lines 33-54).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (US. 5,946,227) in view of Brennan et al. (US. 2004/0228170).

With respected to dependent claim 8, Naji discloses a word current source for a magnetoresistive random access memory circuit as in claim 1 above, with the exception of the control circuit comprising a stabilization amplifier.

Brennan et al, for example in Fig. 1, disclose a control circuit comprising a stabilization amplifier (102) (see column 2, paragraph 0016, line 13-15).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Naji by used differential sense amplifier of Brennan et al, for the purpose of sensing or reading data store in an magnetoresistive random access memory (MRAM) cell at the junction of the selected bit-line and selected word-line. (see column 2, paragraph 0015, and lines 3-8).

8. Claims 10 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (US. 5,946,227) in view of Maruyama et al. (US. 6,407,946).

With respected to dependent claims 10 and dependent 19, Naji discloses a word current source for a magnetoresistive random access memory circuit as in claim 1 and claim 16 above, with the exception of a control input being a regulated mirror gate signal.

Maruyama et al in Fig. 1 discloses a control input (Vcg2) being a regulated mirror gate (60) signal.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art using the current mirror transistor of Maruyama et al apply in the device of Naji for the purpose of create a current proportional to a drain current of the control input circuit (Maruyama et al, see column 3, lines 45-47).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naji (US. 5,946,227) in view of Sin et al. (US. 6,803,615) as applied to claim 1 and claims 5-6 above, and further in view of Brennan et al. (US. 2004/0228170).

With respected to dependent claim 7, the combination of Naji and Sin et al. discloses a word current source for a magnetoresistive random access memory circuit as in claim 1 and a n-channel transistor comprising a complementary metal oxide semiconductor (CMOS) n-channel field effect transistor when CMOS n-channel field effect transistor is turn on and off as in claims 5-6 above with the exception of a current regulator comprising a feed back amplifier.

Brennan et al, for example in Fig. 1, disclose a current regulator (BL current) comprising a feed back amplifier (102) (see column 2, paragraph 0016, line 13-15).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art using amplifier to select bit-line (as discloses in the above combination of Naji and Sin et al.) being associated with MRAM as in Brennan et al, for the purposed of configured in a sense amplifier feedback to attempts to hold the voltage on the selected bit-line.

Allowable Subject Matter

11. Claims 2-4, 9 and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 2 and 17, the prior art of record do not disclose or suggest a voltage regulator that is regulates a voltage level at the gate to limit an amount of current flowing through the n-channel transistor and MRAM circuit.

Regarding clam 9, the prior art of record do not disclose or suggest a read reference switch having a read reference input and a reference output with the read reference switch having a read reference control connected to the read reference gate control signal.

13. Claims 11-15 are allowed.

The following is an examiner's statement of reasons for allowance:

There is no teaching or suggestion in the prior art to: "the control circuit comprises for regulating a voltage level at the gate to limit the amount of current flowing through the CMOS n-channel transistor and MRAM circuit" as claimed in the independent claim 11.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Pho M. Luu whose telephone number is 571.272.1876. The examiner can normally be reached on M-F 8:00AM – 5:00PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Richard Elms, can be reached on 571.272.1869. The official fax number for the organization where this application or proceeding is assigned is 703.872.9306 for all official communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PML
05 July 2005